WHAT IS CLAIMED IS

1. An image processor for embedding in image data an digital watermark including position and rotation information, using an irrotationally symmetric pattern arrangement.

2. The image processor according to claim 1, wherein said irrotationally symmetric pattern arrangement is a two-dimensional matrix constituted by m×n elements.

3. The image processor according to claim 1, wherein said irrotationally symmetric pattern arrangement is a pattern arrangement for which the positive or negative symbols of each corresponding elements are not wholly the same if the pattern arrangement is rotated at an arbitrary angle (except for angles of 360 degrees multiplied by an integer number).

4. An image processor capable of extracting digital watermark information from image data in which said digital watermark information including position and rotation information is embedded, comprising:
        rotation information searching means for performing processing for extracting said rotation information from the image data with said digital

watermark information embedded therein, for a plurality of rotation angles different from one another;

position information searching means for performing processing for extracting said position

5   information from said image data, for a plurality of start-of-extraction positions different from one another;

calculating means for calculating confidence coefficients indicating accuracy as to whether said

10   position and rotation information is extracted, for each information searched by said rotation information searching means and position information searching means and extracted as position and rotation information; and

15   determining means for determining the position and rotation angle at which said digital watermark information is embedded in said image data, based on the confidence coefficient calculated by said calculating means.

20

5.   The image processor according to claim 4, wherein said digital watermark information includes said position information and rotation information and usage information, and

25   said usage information includes the ID of a device or the user ID.

6. The image processor according to claim 4,

wherein said digital watermark information includes said position information and rotation information and usage information, and

5   said usage information includes information for controlling a device.

7. The image processor according to claim 4,

wherein said calculating means calculates

10 confidence coefficients by performing computation of said image data with a matrix constituted by m×n coefficients.

8. The image processor according to claim 7,

15   wherein said matrix computation processing is convolution computation.

9. The image processor according to claim 4, further comprising:

20   extracting means for extracting the digital watermark information embedded in said image data, based on the position in said image data on the basis of the result of determination by said determining means.

25

10. An image processing method of embedding in an image digital watermark information including position

and rotation information, using an irrotationally
symmetric pattern arrangement.

11. An image processing method of extracting digital
watermark information from image data in which said
digital watermark information including position and
rotation information is embedded, comprising:

a rotation information searching step of
performing processing for extracting said rotation
information from the image data with said digital
watermark information embedded therein, for a plurality
of rotation angles different from one another;

a position information searching step of
performing processing for extracting said position
information from said image data, for a plurality of
start-of-extraction positions different from one
another;

a calculating step of calculating confidence
coefficients indicating accuracy as to whether said
position and rotation information is extracted, for
each information searched in said rotation information
searching step and position information searching step
and extracted as position and rotation information; and

a determining step of determining the position and
rotation angle at which said digital watermark
information is embedded in said image data, based on

the confidence coefficient calculated in said calculating step.

12. A computer program product embodying a program for implementing an image processing method of embedding in an image digital watermark information including position and rotation information, using an irrotationally symmetric pattern arrangement.

13. A computer program product embodying a program for implementing an image processing method of extracting digital watermark information from image data in which said digital watermark information including position and rotation information is embedded,

the program comprising:

program codes for a rotation information searching step of performing processing for extracting said rotation information from the image data with said digital watermark information embedded therein, for a plurality of rotation angles different from one another;

program codes for a position information searching step of performing processing for extracting said position information from said image data, for a plurality of start-of-extraction positions different from one another;

program codes for a calculating step of
calculating confidence coefficients indicating accuracy
as to whether said position and rotation information is
extracted, for each information searched in said

5   rotation information searching step and position
information searching step and extracted as position
and rotation information; and

program codes for a determining step of
determining the position and rotation angle at which

10   said digital watermark information is embedded in said
image data, based on the confidence coefficient
calculated in said calculating step.

14. A computer data signal embodied in a propagating

15   wave and used for implementing an image processing
method of embedding in an image digital watermark
information including position and rotation information,
using an irrotationally symmetric pattern arrangement.

20   15. A computer data signal embodied in a propagating
wave and used for implementing an image processing
method of extracting digital watermark information from
image data in which said digital watermark information
including position and rotation information is embedded,

25   comprising:
code signals for use in a rotation information
searching step of performing processing for extracting

said rotation information from the image data with said
digital watermark information embedded therein, for a
plurality of rotation angles different from one
another;

5   code signals for use in a position information
searching step of performing processing for extracting
said position information from said image data, for a
plurality of start-of-extraction positions different
from one another;

10   code signals for use in a calculating step of
calculating confidence coefficients indicating accuracy
as to whether said position and rotation information is
extracted, for each information searched in said
rotation information searching step and position

15   information searching step and extracted as position
and rotation information; and

     code signals for use in a determining step of
determining the position and rotation angle at which
said digital watermark information is embedded in said

20   image data, based on the confidence coefficient
calculated in said calculating step.